



The Measure of the Future

HRI Interface specification

HRI Interface	
<ul style="list-style-type: none"> • 1,5 m connection cable with 4 wire • absolute max. length: 10 m • 2 pulse output: I1, I2 <p>conform to ISO / TC 30 / SC 7 / WG 8</p> <ul style="list-style-type: none"> • Voltage: max. 24 V • current: max. 20 mA • power: max. 0,48 VA • protection resistor: ca.250 Ohm <ul style="list-style-type: none"> • M-Bus and MiniBus (Auto detection) <ul style="list-style-type: none"> • Protocol defined by IEC 870 • Data: meter index and meter number • Possibility to power with the green / brown wires. (during this connection the battery is disabled) • voltage: 5 to 24 V DC 	<p style="text-align: right;">Data *) (green)</p> <p style="text-align: right;">Pulses I1 (white)</p> <p style="text-align: right;">Pulses I2 (yellow)</p> <p style="text-align: right;">Ground (brown)</p> <p style="text-align: right;">250Ω</p> <p style="text-align: right;">0,3V</p> <p style="text-align: right;">*) active for HRI DataUnit only</p>

Communication protocol IEC 870:

Commands to HRI:

SND_NKE

SND_UD

Implementation for primary addressing

Implementation for secondary addressing

Set backward memory =>(from 2^0 to max 2^{20})

Set meter index 0000 0000 0000 (12 digits BCD in 1/10 litre resolution)

Set and reset user lead

Set configuration HRI

- **Description for**
- **M-Bus communication with protocol IEC 870**

Introduction

M-Bus-communication:

Hard- and Software is conform to DIN EN 1434-3 .

Baud rate 300 / 2400 (with Auto speed Detect)

Protocol contents:

Customer number.

meter number.

meter index. 8 digits BCD with m³ resolution

8 digits BCD with Litre resolution

12 digits BCD in 1/10 Litre resolution

Unit: m³

manufacturer code

Possibility to use:

- **for primary addressing**
- **for secondary addressing**
- **of fabrication number**

Initialise communication SND_NKE				
Hex	Bytes	field	Meaning	Ref.
10h	1	Start	Start character Short frame	A-Dokumentation
40h	1	C	initialise communication	„
00h	1	A	Address	„
40h	1	CS	Checksum	„
16h	1	Stop	End character	„

Slave's answer = E5

Initialise SND – UD. Application reset				
Hex	Bytes	field	Meaning	Ref.
68h	1	Start	Start character long frame	A-Dokumentation
03h	1	L	Längenangabe length	
03h	1	L	Längenangabe length	
68h	1	Start	Startzeichen Start	
53h	1	C	Send User Data	
FEh	1	A	Address	
50h	1	CI	Application reset	
A1h	1	CS	Checksum	
16 h	1	Stop	End character	

Slave's answer = E5

Data Req_UD2				
Respond User Data(see table Resp UD.)				
Hex	Bytes	field	Meaning	Ref.
10h	1	Start	Start character Short frame	
5Bh	1	C	Req_UD2 5B/7B alternating	
00h	1	A	Address	
5Bh	1	CS	Checksum	
16h	1	Stop	End character	

Slave's answer = Respond User Data(See Resp UD.)

Resp UD				
Hex	Bytes	field	Meaning	Ref.
				A-Documentation
68h	1	Start	Start character long frame	5.2 page 23
LLh	1	L	Längenangabe length	”
LLh	1	L	Längenangabe length	”
68h	1	Start	Startzeichen start	”
08h	1	C	C field for Resp_UD	5.3 page 24
00h	1	A	Bus Address	5.3 page 25
72h	1	CI	Field for variable data structure	5.3 page 26
78h	4	8 Digit BCD Can be set By Manufacturer Or utility	Meter identification NR	6.3 page 34
56h				
34h				
12h				
18h	2	Man code SPX	Manufacturer	6.3 page 35

4E h		(Aqa) (SOC)	code	
01h	1	Generation	Type /SW version	6.3 page 35
07h	1	medium 07= water	medium to be measured	8.4.1 page 67
00h	1	access	access counter	6.3 page 35
00h	1	status	error status information	6.6 page 50
00h	2	Signature And data encryption	reserve for future	
00h				
0Ch	1	DIF	Data following in: 8 digit BCD	6.3 page 37
78h	1	VIF	Data following is Meter number	8.4.3 page 69
78h	4	e.g. Nr=12345678	Meter Identification number	
56h				
34h				
12h				
0Ch 0Eh	1	DIF	Data following in: 8 digit BCD or 12 digit BCD	8.4.3 page 69
12/13/16	1	VIF	0,0001 0,001 1 m³	8.4.3 page 69
12	4		e.g.(8 digit BCD) 12345678 m ³	
	6		e.g.(12 digit BCD) 123456789120	
12	1		Checksum	
34				
56				
78				
91				
20		CS		
16h	1	Stop	End character	

set sec. address				
Hex	Bytes	field	Meaning	Ref.
68h	1	Start	Start character long frame	
09h	1	L	Längenangabe length	
09h	1	L	Längenangabe length	
68h	1	Start	Startzeichen start	
53/73h	1	C	Send User Data	
FEh	1	A	Addressee	
51h	1	Cl	Daten senden Send data	
0Ch	1	DIF	8 Bit BCD	
79 h	1	VIF	Bus Addressee	
00H	1	Data	8Bit BCD 00 00 00 00	
00H	1	Data	„	
00H	1	Data	„	
00H	1	Data	„	
4Eh	1	CS	Checksum	
16h	1	Stop	End character	

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